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PRODUCTIVITY ANALYSIS AND AN ATTEMPT ON EMPLOYMENT PROJECTION.

1. Introduction.

This paper is written for the Central Planning Bureau's Employment working party (working party No.12).[1] It will examine firstly, the productivity trends in the four firms whose employment behaviour I have been studying. Secondly, for intellectual curiosity, I will go on to analyse productivity of the economy in general by industry.

The second part of the paper will make an attempt on employment projection for the period 1966-71. A general but brief discussion of employment problem will follow.

2. Productivity Trends.

(a) Table 1 shows that with exception of Nytil, productivity at the other three firms, has been increasing at a higher annual rate than output or employment. In fact, employment for the "three" has been declining.

Three types of cases emerge from the analysis:

(i) A firm whose output is rising very rapidly (Nytil, 25-26% per year) but employment expands too (13% per year).

(ii) Two firms whose output is rising moderately (Uganda Breweries 5% per year, Sikh Saw Mills 6% per year). Here productivity rises moderately or rapidly (Uganda Breweries 7% Sikh Saw Mills 16%, and employment falls.

(iii) One firm whose output is falling (B.A.T. Uganda - 3%). Here productivity rises only slowly (3%) as employment falls slowly.

Trends in Fixed Assets, Wage Bill and Average Wage 1960-64.

Firm	Growth in Fixed Assets	Wage Bill	Average Wage
Nytil	14.5% p.a.	29.5% p.a.	14.7% p.a.
Uganda Breweries	1.9% p.a.	7.0% p.a.	8.7% p.a.
B.A.T.Uganda		3.3% p.a.	10.2 p.a.

The capital side shows that Nytil's fixed assets have been increasing at annual rate of 14.5% p.a. for 1960-64 and Uganda Breweries at 1.9%. For both firms the growth rates in capital are greater than growth in employment. The increase in fixed assets at Nytil in 1964 over 1960 was about 72% (compared to 48% in employment) and for Uganda Breweries in the same period it was 8% (compared to a decline in labour force). The capital investment per industrial job at Nytil, up to 1960, was about £1000 per job but from 1960 to 1963 it was something over £1600.

Generally, the trend in wages for three firms has been upward and increasing at a faster rate than productivity.[2]

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1. This is the party working on employment Section of the Second Five - Year Development plan.

2. At Uganda Breweries it is less if you use sales value as the output measure but more if you use cases as the output measure.

(b) The three bases for which output has been measured are current prices, 1960 prices (constant prices) and for corparate and non-African Enterprises, at 1960 prices. The productivity figures (table 2) have been arrived at by dividing the output ratio by employment ratio all for 1960-64; then I have compounded the results from the division exercise to get annual rates.

For agriculture and crop processing, the productivity results based on constant prices are probably the more realistic because of marked price flactuations experienced in these sectors. With regard to other industries however, Mining to Transport and Communications, calculations based on current prices are probably better for our purpose. One has to admit the lack of consensus among economists on the problem of constant and current pricing system. In the case of government there is no independant output measure for this sector.

Calculations on trends in output under all the three bases (table 2) generally showincreases in output. Employment trends however, show a decline in many sectors, consequently high increases in productivity.

3. Employment Projection.

Table 3 is the projection made by Bennett and Nkojo of the Central Planning Bureau. They project an increase of about 100,000 new jobs in the 1966-71 period.

Table 4, also uses demand approach and assumes a similar relationship between increase in output and increase in employment. The difference is that higher productivity assumptions have been made. The new productivity assumptions are based on the productivity exercise in table 2.

The calculations based on new productivity assumptions would seem to show that the Bennett- Nkojo results are an under-estimation of productivity increases and therefore an over-estimation of employment creation. Table 3 projects an increase of 100,000 (35%) new jobs over the five-year period. Table 4 however shows an increase of 66,000 (25%) new jobs in the same period.

In this type of analysis, there are many reasons why one has to be rather cautious. In particular, the projections in agriculture, crop processing and government and miscelleneous services, are the testing ground of the entire exercise. Agriculture employs so many people that a small change could mean a big positive or negative change in projection. For government and miscelleneous services, almost 50% of the projected job increase in the Bennett - Nkojo analysis are in these two sectors.

4. Nature of the problem.

A/ (i) There will be a need to create jobs for those Under-employed mainly in subsistence sector and to a less extent in semi-monetary sector. The impact of development elsewhere will reveal to these people the need to live a better life than they have hitherto known.

(ii) There will be demand for jobs by the unemployed. There are no reliable estimates of the unemployed in the country but long columns of people at gates of major employers in Jinja and Kampala each beginning of the month indicate the seriousnessof the problem.

B/ There will be demand for jobs due to changes in :-

(a) Population. This assumes a net increase in population especially of working category.

(b) Economic set up. Development in general may spark off rising expectations with the effect of seeking more gainful employment than is available.

(c) Social organization. The break up of family system and changes in custom may set free many people who may decide to seek employment.

C/ At this stage, it will probably be necessary to think even of jobs that can be created. Analyses from available data show that most of the decline in employment in the country since 1960 has been concentrated in unskilled category. Thus, the immediate problem appears that of either providing enough manual jobs or vocational training centres. In 1963, unskilled work-force in gainful employment formed 57% of African employees.

5. Conclusion.

The projection results based on table 4 are, admittedly, discouraging but anyone familiarwith the Uganda employment scene in the last five years is not likely to wonder why this alternative should be introduced.

For example one cannot hope for employment in agriculture to increase very much because there the increase in commercial agriculture (5 more sugarestates etc.) will be offset by marked decline in African enterprises due to:

(1) Mechanization and

(2) the minimum wage.

The Minister of Agriculture and Cooperatives has recently indicated in Parliament that about 1,000 tractors will be bought next year. The objective may be to expand the acreage but it is still true that there will be some substitution for labour.

Employers in rural areas will soon be under statutory obligation to pay at least Shs.75/- a month. This is likely to have an immediate employment - reduction effect.

If employment promotion is going to be one of the major aims of next development plan, then in evaluating projects, this goal should rank high on the criteria a project has to fulfill. An attempt to give incentives for labour - intensive structure of production should be started. It appears that the emphasis will have to be put at the pattern of investment and output. In future, the tendency will be of getting more and more mechanized, e.g. a fertilizer producing plant is likely to be in this category. An experiment has got to be made in the field of small industries.

Our experience with some of the companies so far shows that some effort is being made to save the use of labour and many ways have been used:-

(1) Organizational measures have been employed. Supervisory standards have been improved due to increased training of all levels of management.

(2) Increased accent on on the -Job-training. The tendency is to use less but better trained labour.

(3) Capital - intensive structure of production. Increased use and proper layout of machinery has improved the level of efficiency.

These trends will have to be recognized in framing employment policies.

Table 1.

Trends in Output, Employment and Average Productivity in 4 Uganda firms 1960-64.

Firm	Growth in Output p.a.		Growth in Employment	Growth in Average Productivity	
	Using Physical measures	Using Monetary measures		Physical	Monetary
	%	%	%	%	%
Nytil (1960-63)	26.5	25.1	12.7	12.2	11.1
Uganda Breweries	4.8	10.2*	- 1.7	6.6	12.1*
B.A.T. Uganda	- 2.9		- 6.2	3.4	
Sikh Saw Mills		6.2	- 5.8		15.9

Source: EDRP Nos 69, 73, 75 and Sikh Saw Mills Files.

* For our purpose, the Physical measure is the more realistic.

The monetary measure is inflated by the excise duty.

Table 2.

Trends in Productivity by Industry 1960-64.

	At Current prices	At 1960 prices	Corporate & non-African enterprises (at 1960 prices)
Agriculture	7.4% p.a.	3.7% p.a.	11.2% p.a.
Cotton, Coffe & Sugar Processing	6.9% "	11.6% "	11.6% "
Forestry, Fishing & Hunting	5.8% "	1.8% "	5.9% "
Mining & Quarrying	>30% "	16.7% "	16% "
Manuf. of food products	2.7% "	- 1.8%	- 2.1%
Misc. Manufacturing	6.2% "	- 0.9%	- 1.2%
Electricity			9.9% "
Construction	2.1% "	- 2.6%	0%
Commerce	16.2% "	12.3% "	14.2% "
Trnsport & Comm.	5.4% "	5.6% "	9.2% "
Central Government	8.7% "	1.0% "	
Local "	10.1% "	1.2 "	
Misc.	5.3% "		- 0.6%

Source: Statistical Abstracts - Uganda.
Unpublished figures at Statistics Branch, Entebbe.

Table 3.

1966-71. Employment Projections - Bennett-Nkojo Table.

	Increase in Production P.A.	Total Employment 1962	63-66 Sect. Growth Empl. P.A.	63-66 Growth Rate	Total Employment 1966	66 - 71 Sector Growth Rate	66-71 Growth Rate in Empl. P.A.	Total Employment 1971
Agriculture	3	52.2	4.7	1.7	55.9	6.2	3.2	65.4
Crop Processing	4	19.6	6.8	2.8	22.5	4.7	0.7	23.3
Other Manufacturing	5	17.4	9.1	4.1	20.4	18.6	13.6	38.1
Minerals & Mining	3	6.8	-	- 3	6.0	-	- 3	5.2
Construction	10	29.8	5.5	- 4.5	24.9	19.0	9.0	38.3
Transp. & Comm.	4	10.2	4.3	0.3	10.3	7.8	3.8	12.4
Electricity	5	1.6	6.5	1.5	1.7	8.2	3.2	2.0
Commerce	5	19.0	10.6	5.6	23.6	11.3	6.3	32.1
Central Government	-	16.5	2.3	2.3	18.1	6.0	6.0	24.3
Local "	-	28.5	3.7	3.7	33.0	5.7	5.7	43.5
Misc.	-	41.2	3.3	3.3	47.0	10.5	10.5	77.5
Domestic Servants	-	20.6	-	-	21.4	-	-	22.8
TOTAL		263.6			284.8			385.0

Table 4.

1966-71 Employment Projections - Baryaruha Table.

	Increase in Production P.A.	Total Employment 1962	63-66 Sector Growth Rate P.A.	63-66 Growth Rate 1966	Total Employment 1966	66-71 Sector Growth Rate	66-71 Growth Rate in Empl. P.A	Total Employment 1971
Agriculture	4	52.2	4.7	0.7	53.3	6.2	2.2	59.4
Crop Processing	5	19.6	6.8	1.8	20.8	4.7	-.3	20.5
Other Manufacturing	5	17.4	9.1	4.1	19.6	18.6	13.6	37.1
Minerals & Mining	10	6.8	-	- 3	6.2	-	- 3	5.3
Construction	10	29.8	5.5	4.5	24.9	19.0	9	38.3
Transp & Communication	5	10.2	4.3	- 1	9.9	7.8	2.8	11.4
Electricity	10	1.6	6.5	3.5	1.4	8.2	- 1.8	1.3
Commerce	10	19.0	10.6	0.6	19.3	11.3	2.3	22.4
Central Government	3	16.5	2.3	-.7	16.2	6.0	3	18.8
Local "	3	28.5	3.7	0.7	29.1	5.7	2.7	33.2
Misc.	3	41.2	3.3	.3	41.6	10.5	7.5	59.7
Dom. Servants	-	20.6	-	-	21.4	-	-	22.8
TOTAL		263.6			263.7			330.2

TABLE 4.

WAGE STRUCTURE 1958-1963 (African Employees)

	1958	1959	1960	1961	1962	1963
Below 30				1		
30 - 39	20	1	48			
40 - 49	71	103	44	78	70	
50 - 59	94	162	25	33	42	
60 - 69	112	141	6	212	71	83
70 - 79	15	28	105	165	199	28
80 - 89	7	8	151	61	66	11
90 - 99	13	19	61	26	56	7
100 - 124	16	27	25	25	32	316
125 - 149	10	12	22	10	17	28
150 - 174	20	14	13	16	17	11
175 - 199	7	7	14	10	9	13
200 - 299	11	12	18	13	13	9
300 - 399					2	4
400 - 499					1	1

Source: Annual Responses to Enumeration of Employees by permission of Sikh Saw Mills.